

2. ALTERNATIVES

Two alternatives are analyzed in detail in this EA FONSI: The No Action Alternative and the Proposed Action. The Proposed Action is the re-excavation of a partially filled and abandoned river channel through the Sandia bosque in an abandoned floodplain that connects to the Rio Grande. The channel would mimic water distribution during high flows when the river overbanked. This action is intended to provide habitat for the RGSM. Projects of similar construction and scope have been constructed elsewhere along the Middle Rio Grande and have shown success in providing minnow habitat.

2.1 ALTERNATIVES CONSIDERED

2.1.1 No Action Alternative

The No Action Alternative assumes that no human-caused changes would occur in the project area. No channel would be constructed and the bosque would be allowed to continue to develop without interference. Under this alternative, vegetation succession would be allowed to proceed untreated.

2.1.2 Preferred Alternative: The Proposed Action

The proposed action is to construct a meandering channel through part of the currently abandoned floodplain that connects to surface water of the Rio Grande. The channel would be located in a historical side channel on the abandoned floodplain (riparian areas in the bosque no longer regularly flooded) as shown in the LIDAR image in Figure 1-2. The Pueblo of Sandia has already cleared non-native vegetation from the restoration area. Some larger woody debris is available nearby to be placed in the channel to provide cover for aquatic species, especially the RGSM. Additional site preparation may include some maintenance for saltcedar re-sprouts, and cutting or mowing weeds prior to channel construction.

The mouth to the channel would be left open, with no mechanical means of closure. Similarly regulated channels have been constructed at the Los Lunas Habitat Restoration Site adjacent to Los Lunas, New Mexico and in the Albuquerque Reach near Central Avenue. The width of the channel is estimated to be 56 feet top width by 8 feet deep, with 3:1 sloped sides (see Figure C-1 in Appendix C). The total length of the channel is approximately 1,680 feet. This would encompass an area of 2.2 acres.

Excavation of the restoration site for the channel would begin above the OHWM and continue to below the OHWM. Final elevations would be determined once the full range of flows has been established, and the objectives for water holding within the channel would be determined. Based on preliminary estimates, approximately 8.5 cubic yards of material would be generated per linear foot of the excavated channel. It is anticipated that some of this material would be placed along the bank of the new channel to strengthen it, and the remainder would be placed along the levee in already disturbed areas on the Pueblo of Sandia. In addition, some material may be stored and used for road improvements. Construction would likely begin in the fall during low flow conditions, and after resident birds had completed nesting.

The high-flow channel option would provide benefits to RGSM by providing a slow-moving habitat into which RGSM eggs could settle out of the current and shallow areas in which the fish could spawn. In addition, riparian birds, mammals, reptiles, and amphibians would find improved habitat along the channel.

Following construction, approximately 5 acres of native plants including coyote willow and Gooding's willow would be planted in patches along the margins of the channel to reduce erosion. Other native vegetation, including cottonwood, willow poles and New Mexico olive, would be planted on disturbed areas (channel margins, access routes, staging areas, etc.). The plantings would stabilize the channel, reduce erosion, and provide habitat for RGSM egg retention. The channel would be lined with native willows and native grasses would be seeded in other disturbed areas with a tractor and grass drill. Cottonwood pole planting or live trees would be planted at a density of 10 trees per acre adjacent to the channel. Holes for the poles would be drilled with an auger powered by a small bobcat tractor. Vegetation would be purchased from local stock to promote genetic compatibility with local native vegetation. Logs would be placed in the channel to provide cover and habitat for aquatic species.

The Pueblo of Sandia would monitor the site for vegetative survival and re-growth, channel characteristics, and the presence of birds (especially the Flycatcher), and other wildlife. Complete site restoration would likely take several years as plants get firmly established. Ultimately, long-term wildlife use (including the RGSM and Flycatcher), habitation, and reproductive success would need to be assessed and quantified. Existing RGSM and Flycatcher monitoring protocols established by the USFWS would be employed at the site. These long-term monitoring efforts would be addressed in detail with the creation of a bosque Monitoring Plan. The Pueblo of Sandia conducts monthly monitoring of the RGSM with the USFWS. This monitoring has been conducted since 2002. The Pueblo of Sandia would explore the possibility of establishing monitoring sites in and around the project area after construction of habitat improvements.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED

In 2003, the Pueblo of Sandia commissioned several conceptual designs for improvement of RGSM habitat (Table 2-2). These alternatives were based on conceptual drawings prepared for the Pueblo in 2003 and included bankline modifications such as coves and terraces. However, recent projects for RGSM habitat improvements have indicated that these modifications are short-lived, and do not always provide all of the expected benefits. At sites that incorporated similar alterations, the modifications tended to last only 2-3 years before losing much of their habitat value. In addition, the permitting issues would have been considerably more cumbersome with these alternatives. Finally, these alternatives would have led to the loss of Pueblo of Sandia land, as bankline was removed for the alterations.

Another alternative that was considered was a different channel alignment at the same site. However, after several site visits and an examination of LIDAR photography, it was determined that the best use of resources would be to utilize an abandoned floodplain channel that was still visible on the site. This would also minimize ground disturbance and the need for disposal of fill.

Table 2-1. Summary of Tasks Considered for the Proposed Action

Technique	Description	Benefits
Surveying	Site survey to determine final engineering design of channel	Maximizes potential for water to enter channel at desired levels and during desired timeframes for silvery minnow
Baseline Wildlife Surveys	Seasonal surveys for birds, reptiles, and other fauna	Minimize disturbance to wildlife; maximize habitat benefits for wildlife present
Removal of Weeds	Control of weeds prior to construction, most likely mechanically	Cleans site and makes construction easier and more precise
Channel Excavation	Excavation of channel with heavy equipment	Most cost-effective and precise method of channel development
Replanting Native Vegetation	Replant site with native vegetation	Provides habitat, stabilizes soil, and reduces erosion from rain impact
Monitoring	Continued monitoring of site for presence of silvery minnows, willow flycatchers, other wildlife, natural revegetation, and weeds	Enables accurate and quantitative depiction of success (or failure) of the project

Table 2-2. Alternatives Eliminated from Consideration

Technique	Description	Benefits of Technique	Reason for Elimination
Bankline Alterations: Coves	"Scalloped" indentations in bank to allow slack water areas for minnow development	Has been shown to provide short-term refugia for minnows	Elimination of terrestrial habitat; benefits very short term (often 2 to 3 years).
Bankline Alterations: Terraces	Layered "terraces" formed to allow for different depths of water for slack water for minnows under different water levels	Allows water at different levels to provide minnow habitat	Elimination of terrestrial habitat; benefit very short term (only 2 to 3 years); sloughing of banks.
Alternative Alignment at Same Site	A different alignment for the channel was initially considered at the site	Convenience, ease of construction	Site was altered to allow incorporation of abandoned channel to minimize site disturbance and incorporate channel feature.